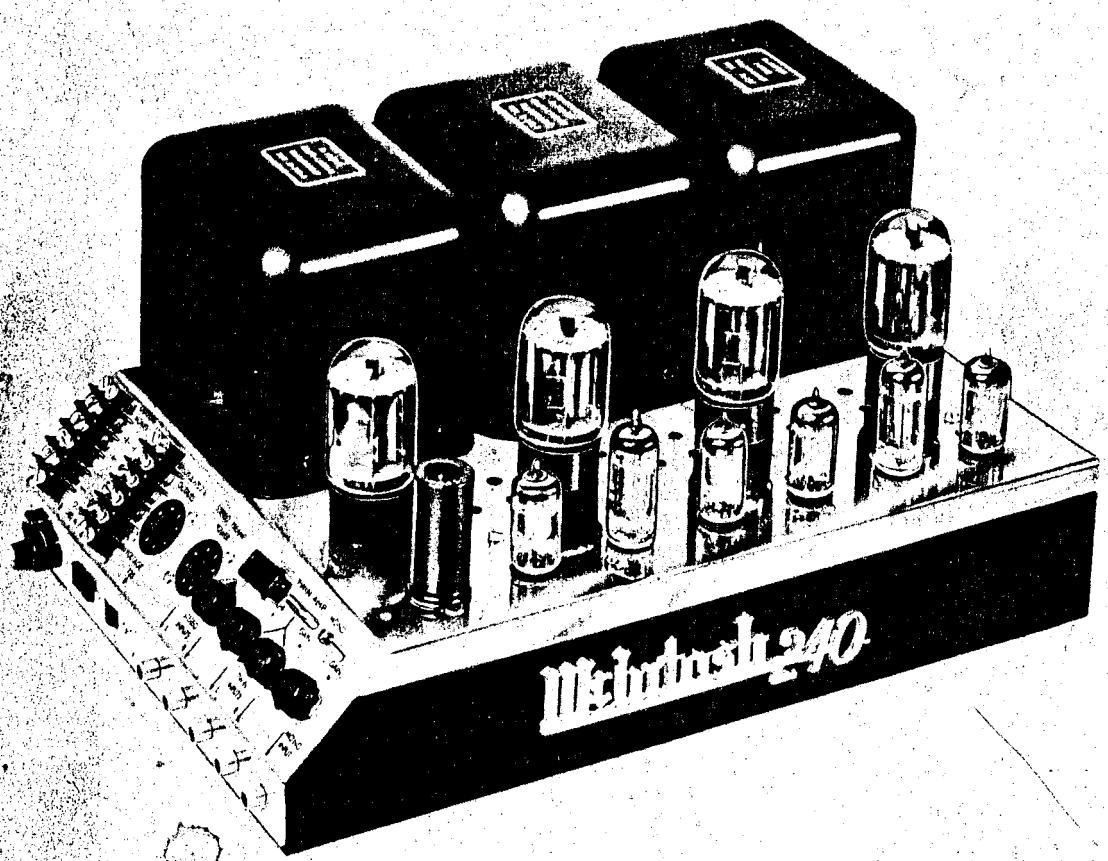
# INSTRUCTION MANUAL

## McINTOSH MODEL MC-240

## TWIN 40 WATT STEREO POWER AMPLIFIER

Serial No. 1P001 And Above




McINTOSH LABORATORY, INC.
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## VOLTAGE AND RESISTANCE CHART

| Tube | Pin No. | DC Volts No. Signal | AC Volts at rated output | Resistance in Ohms Unit Off |
|---|---|---|---|---|
| 12AX7 | 1 | 103 | 1.9 | 160K* |
| (VI) | 2 | 0 | .42 | 1M |
| | 3 | .7 | .41 | 3.3K |
| | 4 & 5 | 0 | 0 | 0 |
| | 6 | 103 | 1.9 | 160K* |
| | 7 | 0 | .42 | 1M |
| | 8 | .7 | .41 | 3.3K |
| | 9 | 0 | 6.3 | 0 |
| 12AU7 | 1 | 205 | 11 | 40K* |
| (V2 or V5) | 2 | 103 | 1.9 | 160K* |
| | 3 | 108 | .9 | 18K |
| | 4 & 5 | 0 | 0 | 0 |
| | 6 | 205 | 11 | 43K* |
| | 7 | 85 | 0 | 2.4M* |
| | 8 | 108 | .9 | 18K |
| | 9 | 0 | 6.3 | 0 |
| 12BH7 | 1 | 350 | 144 | 12K* |
| (V3 or V6) | 2 | 18 | 11 | 200K |
| | 3 | 35 | .6 | 2.7K |
| | 4 & 5 | 0 | 0 | 0 |
| | 6 | 350 | 144 | 12K* |
| | 7 | 18 | 11 | 200K |
| | 8 | 35 | .6 | 2.7K |
| | 9 | 0 | 6.3 | 0 |
| 12AX7 | 1 | 430 | 108 | 26* |
| (V4 or V7) | 2 | -46 | 144 | 1.1M |
| | 3 | -46 | 136 | 260K |
| | 4 & 5 | 0 | 0 | 0 |
| | 6 | 430 | 108 | 26* |
| | 7 | -46 | 144 | 1.1M |
| | 8 | -46 | 136 | 260K |
| | 9 | 0 | 6.3 | 0 |
| 6L6GC/7027A | | | | |
| (V8, V9, V10, V11) | 1 | -- | -- | -- |
| | 2 | 0 | 0 | 0 |
| | 3 | 430 | 108 | 27* |
| | 4 | 430 | 108 | 26* |
| | 5 | -46 | 136 | 260K |
| | 6 | -- | -- | -- |
| | 7 | 0 | 6.3 | 0 |
| | 8 | .7 | 108 | 26 |

*This Resistance measured with condenser C25A shorted to ground.

## SPECIFICATIONS

| | |
|---|---|
| Power Supply: | 105-130 volts 50/60 cps. Power transformer is tapped at 117 and 125 volts. |
| Power Requirement: | 145 watts at no signal output<br>270 watts at full power output |
| Power Output: | Stereo or twin amplifier - 40 watts output each channel<br>Single channel (mono) - 80 watts output. |
| Frequency Range: | ± 0.1 db 20 cps to20KC at full power output<br>± 1.0 db 15 cps to 60KC at full power output<br>± 1.5 db 10 cps to 100KC at half power output |
| Harmonic Distortion: | Less than 0.5% at full rated power output at any frequency from 20 cps to 20KC |
| Intermodulation Distortion: | Less than 0.5% at peak power output of twice the full rated power output. |
| Phase Shift: | Less than ± 6° from 20 cps to 20KC |
| Noise and Hum Level: | Better than 90 db below rated output |
| Output Load Impedances: | Stereo or twin amplifier - 4, 8, 16 (25 volts), 125 (70.7 volts), and 600 ohms<br>Single channel (Mono) - 2, 4, 8 (25 volts), 16, 32, 62 (70.7 volts), and 300 ohms |
| Damping Factor: | About 10 to 1 |
| Input Level: | Single channel and twin amplifier - 0.4 volts for full power output<br>Stereo amplifier - 2.0 volts for full power output |
| Input Impedance: | 250,000 ohms |
| Input Controls: | Gain controls provided for single MONO or TWIN AMPLIFIER inputs<br>Balance control provided for STEREO channels |
| Tube Complement: | 3 ea. 12AX7 — 2 ea. 12BH7<br>2 ea. 12AU7 — 4 ea. 6L6GC or 7027A |
| Fuse: | 3.2 A Slo-blo |
| Preamplifier Power Provisions: | A power receptacle is provided to supply 25.2 volts CT at 1.2 A and 375V at 15 MA |
| Finish: | Chromium and Black |
| Size: | 16 1'8" x 10 1'2" x 7 7/8" |
| Weight: | 56 pounds net |

## DESCRIPTION

The McIntosh Model MC-240 is a twin 40 watt per channel Stereo Power Amplifier consisting of two separate power amplifiers mounted on one chassis. It is designed for home entertainment systems and professional applications where high power and distortion free performance is required.

The MC-240 is equipped with an input switching facility so that it may be used in three different manners as follows:

1. As a two channel STEREO amplifier providing 40 watts of output from each channel. The STEREO input should be used for all normal stereo applications. The input sensitivity for rated output is 2.0 volts.

2. As an independent TWIN AMPLIFIER providing 40 watts of output from each channel. The TWIN AMPLIFIER input should be used where two separate amplifying channels are required such as when using an electronic crossover network requiring separate treble and bass amplifier-speaker systems. This input may also be used for Stereo if increased input sensitivity is desired. About 0.4 volts will drive the amplifier to rated output.

3. As a single channel MONO amplifier providing 80 watts of output. The input sensitivity for rated output is 0.4 volts.

The MC-240's output circuit has low impedance taps for direct connection to loudspeakers plus taps for 25 volt and 70.7 volt distribution systems and, additionally, a 300/600 ohm output for use with lines or other high impedance loads.

The MC-240, like other McIntosh power amplifiers, uses the exclusive McIntosh high efficiency output circuit and bifilar output transformers to obtain the high standard of performance offered by this amplifier.

Each of the three input facilities is equipped with a gain or level balance control.

## INSTALLATION

Location:

The MC-240 will operate satisfactorily at normal room temperatures. Care should be taken when mounting the amplifier to provide sufficient ventilation for adequate cooling. If the amplifier is housed in a cabinet or other enclosure holes must be provided for air circulation.

Input Connections:

1. For STEREO operation connect the stereo input signals (output from a stereo preamplifier, tuner, or tape recorder) to the STEREO INPUT "L" (left) and "R" (right) jacks. Switch the input selector switch to STEREO. The BALANCE control may be used to balance the amplifying - speaker system. This control's normal position is straight up or the "zero" position where equal amplification is provided through both amplifier channels.

For stereo operation using a non self powered preamplifier the procedure for connecting is the same as outlined above except that the preamplifier power and audio signals are connected by means of the octal STEREO PREAMP POWER receptacle.

2. For TWIN AMPLIFIER operation connect the two input signals to the TWIN INPUT "L" and "R" jacks. Place the input selector switch in the TWIN AMPLIFIER position. Adjust the input level as required using the twin amplifier GAIN controls. Clock-wise rotation increases the gain. A small dot indicates the position of this control where 2.0 input volts will drive the amplifier to full output. This level, 2.0 volts, is the standard output level provided by McIntosh preamplifiers.

3. For single channel MONO operation connect the input signal to the MONO INPUT jack. Place the input selector switch in the MONO position. Adjust the input level using the mono GAIN control. See the above under TWIN AMPLIFIER operation regarding the small dot at the 2.0 volt position of this control.

Output Connections:

1. For STEREO operation, each channel of the MC-240 has output impedance of 4, 8, 16 (25 volts), 125 (70.7 volts) and 600 ohms. Connect the load to the amplifier as follows:

| Load Impedance: | Left Output | Right Output |
|---|---|---|
| 4 ohms | "L" com and "L" 4 ohms | "R" com and "R" 4 ohms |
| 8 ohms | "L" com and "L" 8 ohms | "R" com and "R" 8 ohms |
| 16 ohms (25 volts) | "L" com and "L" 16 ohms | "R" com and "R" 16 ohms |
| 125 ohms (70.7 volts) | Output socket pins 1 & 2 | Output socket pins 1 & 4 |
| 600 ohms | Output socket pins 2 & 3 | Output socket pins 4 & 5 |

(Note - Pin 1 on output socket is ground and center tap of the 600 ohm outputs).

2. For TWIN AMPLIFIER operation, each channel should be connected similar to the above tabulated connections for stereo operation.

3. For single channel MONO operation the MC-240 has output impedances of 2, 4, 8 (25 volts), 16, 32, 62 (70.7 volts) and 300 ohms. Connect the load to the amplifier as follows:

| Load Impedance: | Connect Load To: | Jumper Together: |
|---|---|---|
| 2 ohms | "L" com and "L" 4 ohms | "L" com to "R" com<br>"L" 4 ohms to "R" 4 ohms |
| 4 ohms | "L" com and "L" 8 ohms | "L" com to "R" com<br>"L" 8 ohms to "R" 8 ohms |
| 8 ohms (25 volts) | "L" com and "L" 16 ohms | "L" com to "R" com<br>"L" 16 ohms to "R" 16 ohms |
| 16 ohms | "L" com and "R" 8 ohms | "R" com to "L" 8 ohms |
| 32 ohms | "L" com and "R" 16 ohms | "R" com to "L" 16 ohms |
| 62 ohms (70.7 volts) | Output socket pins 1 & 2 | Output socket pins 2 to 4 |
| 300 ohms | Output socket pins 2 & 3 | Output socket pins 2 to 4<br>and 3 to 5 |

(Note - Pin 1 on output socket is ground and center tap of the 300 ohm output).

It is important that the loudspeaker or other load be properly matched to the amplifier if best performance is to be obtained. Because many loudspeakers do not have voice coil impedances exactly matching 4, 8 and 16 ohms, the following table lists suggested connections for best impedance matching:

| Speaker Impedance | 3.2 to 6.5 ohms | 6.5 to 13 ohms | 13 to 26 ohms |
|---|---|---|---|
| Connect to: | 4 ohms | 8 ohms | 16 ohms |

For stereo or twin channel operation it is not necessary to use the same impedance load on each output. Simply connect each output for the impedance desired.

WARNING: Do not parallel the amplifier outputs when using the amplifier as a stereo amplifier or twin channel amplifier. Damage to the output tubes may result if parallel operation is attempted.

Power Connections:

The MC-240 operates from any 105 to 130 volt 50/60 cps power line. A line voltage selector switch is provided near the fuse holder to select power transformer primary taps at 117 or 125 volts. This switch should be placed in the 117 volt position for 105 to 120 volt power sources and in the 125 volt position for 120 to 130 volt sources. If the voltage sources is unknown but between 105 and 130 volts it is suggested the switch be placed in the 125 volt position.

A line voltage power receptacle is located on the chassis as a convenience for powering associated equipment such as a tuner or preamplifier. This outlet will provide up to 300 watts of power. The outlet is not fused in the power amplifier.

## GUARANTEE

We guarantee the performance of this equipment and the mechanical and electrical workmanship to be free of series defects for a period of 90 days. This guarantee does not extend to components damaged by improper use nor does it extend to transportation to and from the factory.

## SERVICE INFORMATION

All McIntosh equipment is designed for long trouble free operation. All components are of the highest quality and are conservatively operated. If trouble develops the amplifier may be serviced by your franchised dealer, a competent serviceman, or returned to the factory. Equipment will not be accepted at the factory unless factory return authorization is first obtained. The following chart of operating voltages and resistances is offered as a guide for servicing the unit. All voltages and resistances are measured to chassis with a high impedance VTVM. NOTE - UNIT MUST BE TURNED OFF WHEN MEASURING RESISTANCES.

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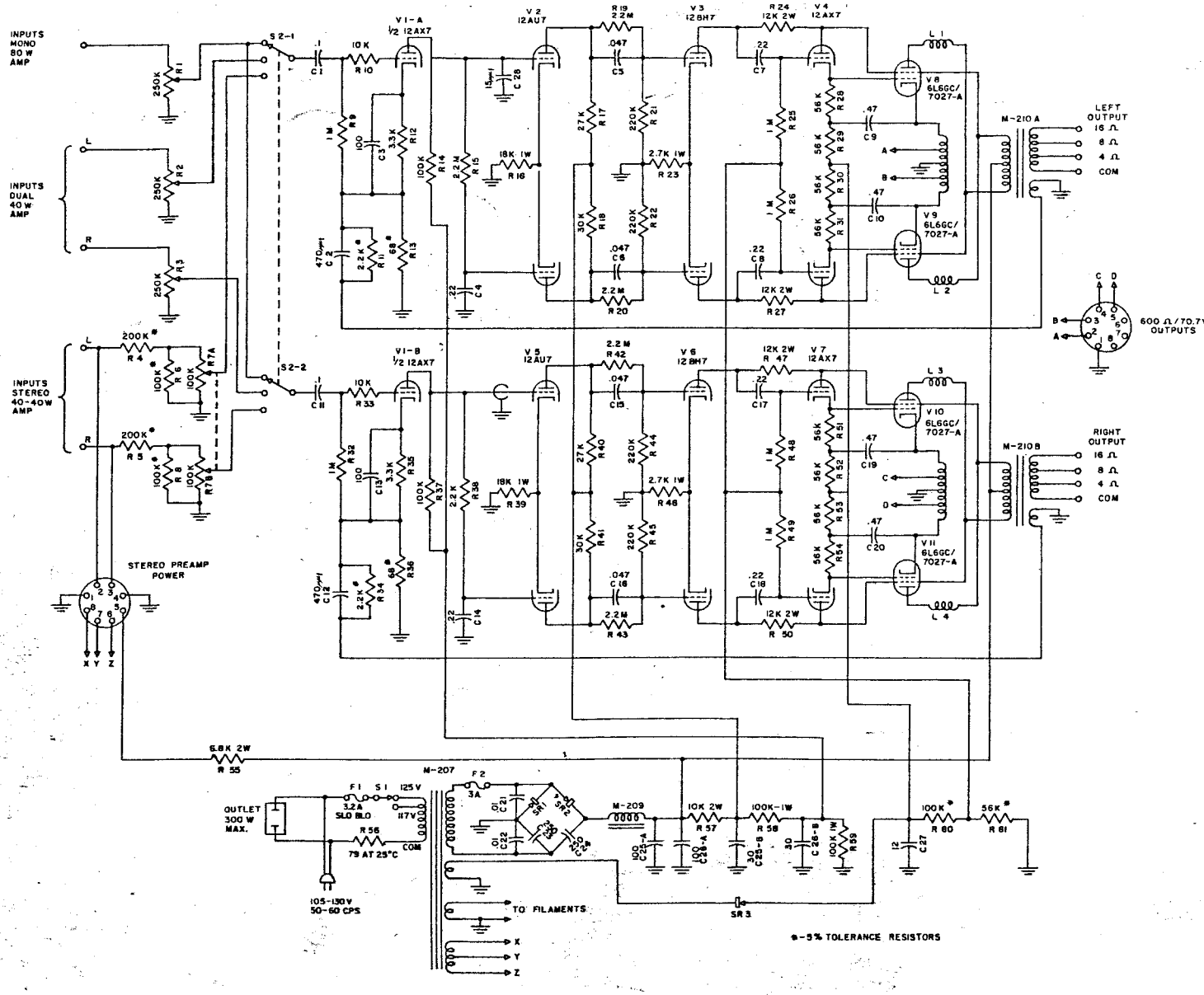


STEREO PREAMP POWER CONNECTIONS

PIN 1 – GROUND
PIN 2 – L INPUT
PIN 3 – R INPUT
PIN 4 – GROUND
PIN 5 – 375 V DC AT 15MA
PIN 6 – 25.2 V AT 1.2A
PIN 7 – 25.2 V CENTER TAP
PIN 8 – 25.2 V AT 1.2A

600 Ω / 70.7 V OUTPUT RECEPTICAL CONNECTIONS

PIN 1 – GROUND, 70.7 V RETURN, AND 600 Ω C.T.
PINS 1 AND 2 – LEFT 70.7 V OUTPUT
PINS 2 AND 3 – LEFT 600 Ω OUTPUT
PINS 1 AND 4 – RIGHT 70.7 V OUTPUT
PINS 4 AND 5 – RIGHT 600 Ω OUTPUT

SINGLE CHANNEL (MONO) OUTPUT NOTE:

FOR SINGLE CHANNEL OUTPUT PARALLEL OR SERIES CONNECT THE L AND R OUTPUTS TO OBTAIN DESIRED OUTPUT IMPEDANCE.

| REVISIONS | | | McINTOSH LABORATORY INC. 2 CHAMBERS ST. BINGHAMTON, N. Y. |
|---|---|---|---|
| | | | SCHEMATIC, MC-240 |
| | | | DRAWN BY VG · SCALE · MATERIAL |
| | | | CHECKED · DATE 7.13.60 · DRAWING NO. SC-106-161 |
| | | | TRACED · APPD SAC |